

## CLAIMS

1. A catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid by oxidizing an olefin or  $\alpha,\beta$ -unsaturated aldehyde with molecular oxygen in a liquid phase, wherein a precious metal is supported on activated carbon having a specific surface area of 100 m<sup>2</sup>/g or more and 1300 m<sup>2</sup>/g or less.  
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2. A catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to claim 1, wherein the precious metal is one or more selected from a group consisting of palladium, platinum, rhodium, ruthenium, iridium, gold, silver, and osmium.  
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3. A catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to claim 1 or 2, wherein an amount of loading of the precious metal is in a range of 0.1 to 40 wt% with respect to the activated carbon before loading.  
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4. A catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to any one of claims 1 to 3, which is a catalyst for preparation of acrylic acid from propylene or acrolein, or a catalyst for preparation of methacrylic acid from isobutylene or methacrolein.  
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5. A catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to any one of claims 1 to 4, wherein the specific surface area of the activated carbon is 100 m<sup>2</sup>/g or more and 1000 m<sup>2</sup>/g or less.  
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6. A preparation method of the catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to any one of claims 1 to 4, comprising selecting activated carbon having a specific surface area of 100 m<sup>2</sup>/g or more and 1300 m<sup>2</sup>/g or less and loading the precious metal on the  
5 activated carbon.

7. A preparation method of the catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to claim 5, comprising selecting activated carbon having a specific surface area of 100 m<sup>2</sup>/g or more and  
10 1000 m<sup>2</sup>/g or less and loading the precious metal on the activated carbon.

8. A preparation method of the catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to claim 6 or 7, comprising a step of reducing a precious metal compound corresponding to the precious metal to  
15 be loaded on the activated carbon with a reducing agent in the presence of the activated carbon.

9. A preparation method of the catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to claim 8, comprising adding the  
20 reducing agent to a solution of the precious metal compound in which the activated carbon is dispersed, to reduce the precious metal compound, whereby the precious metal is loaded on the activated carbon.

10. A preparation method of the catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to claim 9, wherein the precious metal  
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compound is a chloride, oxide, acetate, nitrate, sulfate, tetra-ammine complex or acetylacetonate complex of the precious metal.

11. A preparation method of the catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to claim 9 or 10, wherein a concentration of the precious metal compound in the solution is in a range of 0.1 to 20 wt%.

12. A preparation method of an  $\alpha,\beta$ -unsaturated carboxylic acid, comprising a step of carrying out a reaction in which an olefin or  $\alpha,\beta$ -unsaturated aldehyde is oxidized with molecular oxygen in a liquid phase in the presence of the catalyst for preparation of an  $\alpha,\beta$ -unsaturated carboxylic acid according to any one of claims 1 to 5 to prepare the  $\alpha,\beta$ -unsaturated carboxylic acid.

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